The National Center for Academic Transformation

Experts in improving learning and reducing cost in higher education.

The Learning MarketSpace, January 2011

A quarterly electronic newsletter of the National Center for Academic Transformation highlighting ongoing examples of redesigned learning environments using technology and examining issues related to their development and implementation.

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THE CAT VIEWPOINT

Offering perspectives on issues and developments at the nexus of higher education and information technology.

A Snapshot of the State of Developmental Math Education

Changing the Equation (CTE) is a major program to engage the nation's community colleges in a successful redesign of their remedial/developmental math sequences. Each institution participating in the program will improve student learning outcomes while reducing costs for both students and institutions using NCAT's proven redesign methodology.

NCAT has accumulated a significant amount of data about these institutions' existing developmental math programs, which, we believe, are indicative of the national state of developmental math instruction at two-year institutions. We thought you would find these data of interest. The article below summarizes these data and provides links to a number of specific data charts.

In addition, while all 38 projects will redesign their developmental math sequences using the same pedagogical principles, there are differences among them in the ways in which they will implement their redesigns. This article also summarizes these differences and provides links to charts that list specifics for each institution.

What is the scope of *Changing the Equation*?

Changing the Equation is a large-scale redesign project which will impact about 120,000 students annually at 38 participating two-year institutions in its first year of full implementation. The total number of individual mathematics courses that will be redesigned is 114, and the total number of individual sections that will be redesigned is 4,531. These courses currently enroll about 112,000 students.

After the redesign, the total number of sections offered will be 3,416 enrolling about 120,000 students. This means that the number of developmental math sections offered at these institutions will be reduced by about 25% while the student enrollment will increase by about 5.5%.

Are the *Changing the Equation* institutions representative of the nation's community colleges?

The participating institutions appear to be fairly representative of the nation's community colleges but are somewhat skewed toward larger institutions:

- 31% of community colleges have a fall headcount of less than 2,000 students; for CTE it's 18%.
- 36% of community colleges have a fall headcount between 2,000 and 6,000 students; for CTE it's 39%.
- 27% of community colleges have a fall headcount between 6,000 and 20,000 students; for CTE it's 37%.
- 5% of community colleges have a fall headcount between 20,000 and 60,000 students; for CTE it's 5%.

What are the current student success rates at the 38 participating institutions?

Among the *Changing the Equation* institutions, the average percentage of students who receive a grade C or better rate in developmental math in the spring semester is 48.2%. In the fall semester, that rate is 50.7%.

Passing rates in spring terms are typically lower than in fall terms since spring includes those who failed to pass in fall, math avoiders, etc. In spring 2010, 59% of students among the *Changing the Equation* institutions had a success rate of less than 50%. In fall 2009, that percentage was 46%.

How many developmental math courses are currently offered in each sequence, and how will that number change after redesign?

Most community colleges in the U.S. offer a series of remedial and developmental courses taught primarily in traditional classroom settings in a semester or quarter format. Weaker students may be required to complete a significant number of full terms of coursework prior to advancing into regular college-level courses. Further, students are required to take an entire course even though they may only be deficient in a portion of the topics. All students are required to learn at the same pace and with the same instructional strategies as the entire class.

Although developmental math is largely viewed as a relatively coherent body of content, the number of courses that cover that content varies considerably. While the majority of the 38 institutions offer a two- or three-course sequence, about a quarter of the institutions offer between four and six developmental math courses.

Traditional Courses

- 13 institutions (34%) offer 2 courses.
- 17 institutions (45%) offer 3 courses.
- 5 institutions (13%) offer 4 courses.
- 1 institution (3%) offer 5 courses.
- 2 institutions (5%) offer 6 courses.

Since all but one of these institutions offer courses on a semester basis, the time that students must remain in developmental math before moving on to a college-level math course can be considerable.

After the redesigns are complete, the majority of the institutions will offer a one- or two-course sequence, and no institution will offer more than four courses. Half of the institutions will keep the number of courses the same, and half will reduce the number of courses they offer.

Redesigned Courses

- 7 institutions (18%) will offer 1 course.
- 11 institutions (29%) will offer 2 courses.

- 18 institutions (47%) will offer 3 courses.
- 2 institutions (5%) will offer 4 courses.

Five of the institutions will follow the example of Jackson State Community College and offer one or more "shell" courses. Shell courses have no topics and no credits associated with them. They are simply devices to allow students to enroll from one term to another. Jackson State calls these shell courses Developmental Math I, Developmental Math II and Developmental Math III. Any student in any given shell course can be studying any topic in the total developmental math sequence.

Since all *Changing the Equation* redesigns will allow students to move from one course to another as soon as the content has been mastered, student progress through the developmental sequence will be much more rapid.

How many modules will each institution create?

NCAT has learned that the combination of a modularized curriculum (rather than a course-based curriculum) and a mastery-based learning strategy (rather than "you get it or you don't and, if you don't, you start over") is critical to increasing success in developmental math. Because learning in these skills-based courses occurs in specific increments and the time required to master each increment varies from person to person, a course-based system lacks the flexibility that can lead to greater student success. Thus, an important feature of each redesign conducted as part of *Changing the Equation* will be to allow students to start anywhere in the developmental course sequence based on their learning needs. Students will progress through content modules at a faster pace if possible or at a slower pace if necessary, spending the amount of time needed to master the module content.

The number of modules created by the *Changing the Equation* participants varies considerably:

- 5 institutions (13%) will create between 5 and 9 modules.
- 11 institutions (29%) will create between 10 and 13 modules.
- 14 institutions (37%) will create between 14 and 18 modules.
- 8 institutions (21%) will create between 20 and 31 modules.

Which version of the Emporium Model will predominate?

In redesigning developmental and introductory mathematics courses, NCAT's partner institutions have found that the Emporium Model has consistently produced spectacular gains in student learning and impressive reductions in instructional costs. All participants in *Changing the Equation* will implement the Emporium Model. They will, however, do so in various ways.

Prior to the launch of *Changing the Equation*, three versions of the Emporium Model have been successful: 1) a flexible version, 2) a fixed version, and 3) a combination of the fixed and flexible versions.

In all three versions, mandatory attendance (e.g., a minimum of three hours weekly) in a computer lab or computer classroom ensures that students spend sufficient time on task and receive on-demand assistance when they need it. In all three versions, mandatory weekly group meetings enable instructors to follow up where testing has identified weaknesses, emphasize particular applications or build community among students and with instructors.

At most four-year institutions, the flexible version has predominated. This means that while a minimum number of lab hours are mandatory, they may be completed at any time at the student's convenience.

At Jackson State Community College, the fixed version—that is, mandatory lab hours scheduled by the institution for student cohorts—was successfully implemented. Cleveland State Community College developed the third version—that is, three mandatory hours are required each week but they are a combination of one fixed meeting, one flexible hour in the lab and one additional hour spent working with the software from anywhere (e.g., from home.)

Changing the Equation institutions will implement the Emporium Model in the following ways:

- 23 institutions (61%) will implement a fixed version, requiring a range of 2.5 to 6 hours of student participation in a lab or computer classroom each week.
- 2 institutions (5%) will implement a flexible version, requiring 2 to 3 hours of participation in a lab plus 1 hour in a focus group each week.
- 13 institutions (34%) will implement a combination of the fixed and flexible versions, requiring a range of 3 to 5 hours of participation each week.

Which commercial software packages will be used?

All 38 of the participating institutions will base their redesigns on using instructional software readily available in the commercial marketplace. The success of developmental and college-level math redesigns at NCAT partner institutions over the last decade, impacting hundreds of thousands of students, have demonstrated beyond a shadow of a doubt the efficacy of using commercial materials to improve student learning while reducing instructional costs.

In *Changing the Equation*, four commercial software packages will be utilized: ALEKS, Carnegie Learning, Hawkes Learning Systems and MyMathLab.

How will student learning outcomes be assessed?

Each of the 38 institutions will measure the impact of the redesign on student learning by comparing learning outcomes in the traditional format with learning outcomes in the redesigned format.

- 15 institutions will compare scores on common final examinations.
- 17 institutions will compare performance on common content items selected from final examinations.
- 1 institution will compare performance on pre- and post-tests.
- 6 institutions will compare both final exam and pre/post test scores.

(There are 39 institutions listed because one institution will use different assessment methods in different courses.)

What does it cost to deliver developmental math in the traditional format at these community colleges?

The total cost to deliver developmental education in the traditional format at the 38 institutions is $22.5 million. This figure is based on 2009-2010 salaries. This total cost translates to an average of about $221 per student enrollment.

Cost of traditional developmental math programs by institution:

- At 6 institutions (16%), the cost is between $1m and $2.6m.
- At 8 institutions (21%), the cost is between $500,000 and $1,000,000.
- At 21 institutions (55%), the cost is between $100,000 and $500,000.
- At 3 institutions (8%), the cost is $100,000 or less.

Cost of traditional developmental math programs by cost-per-student:

- At 3 institutions (8%), the cost-per-student is $400 or more.
- At 5 institutions (13%), the cost-per-student is between $300 and $400.
- At 12 institutions (32%), the cost-per-student is between $200 and $300.
- At 8 institutions (21%), the cost-per-student is between $150 and $200.
- At 10 institutions (26%), the cost-per-student is between $100 and $150.

What will it cost to deliver developmental math in the redesigned format at these community colleges?

The total cost to deliver developmental education in the redesigned format at the 38 institutions is projected to be $17.7 million. This total cost translates to just over $161 per student enrollment.

Cost of redesigned developmental math programs by institution:

- At 4 institutions (11%), the cost is projected to be between $1m and $2.6m.
- At 5 institutions (13%), the cost is projected to be between $500,000 and $1,000,000.
- At 23 institutions (61%), the cost is projected to be between $100,000 and $500,000.
- At 6 institutions (16%), the cost is projected to be $100,000 or less.

Cost of redesigned developmental math programs by cost-per-student:

- At no institution is the cost-per-student projected to be more than $350.
- At 4 institutions (11%), the cost-per-student is projected to be between $300 and $350.
- At 6 institutions (16%), the cost-per-student is projected to be between $200 and $300.
- At 6 institutions (16%), the cost-per-student is projected to be between $150 and $200.
- At 22 institutions (58%), the cost-per-student is projected to be between $100 and $150.

What is the total projected amount of cost savings generated by the program?

The total cost of developmental education in the redesigned format is projected to be $17.7 million. This total cost translates to just over $161 per student enrollment. Thus, the total projected savings attributable to the redesigns will be about $4.8 million. This figure is also based on 2009-2010 salaries.

Note: NCAT's costing methodology uses the following approach. Prior to beginning their redesigns, each team analyzed the costs of the traditional format of the course during AY 2009-10. Each project also projected what their savings would be as a result of the redesign in the first year of full implementation, AY 2011-2012 using the same salary figures (from AY 2009-2010). Were one to use actual 2011-2012 salaries, the effect may be to "deflate" the savings simply because of salary increases at the institution between the two timeframes. (Example: instructor salaries in 2009-10 = $30,000; instructor salaries in 2011-12 = $32,000.) The reason for using the same baseline salary figures rather than the actual salaries is to understand the effect of the structural changes made in the course on cost and to isolate the impact of the redesign on those changes.

The average projected reduction in the cost-per-student is about 27%.

- 8 institutions (21%) project a reduction in the cost-per-student of 15% or less.
- 12 institutions (32%) project a reduction in the cost-per-student of between 15% and 30%.
- 13 institutions (34%) project a reduction in the cost-per-student of between 30% and 40%.
- 5 institutions (13%) project a reduction in the cost-per-student of between 40% and 55%.

NCAT calculates each institution's projected cost reduction in two ways: the total dollar decrease and the decrease in the cost-per-student. The average reduction in total dollars is 24.6% whereas the average reduction in the cost-per-student is 27.5%. What accounts for the difference?

The impact of planned enrollment growth at some of the institutions accounts for the difference in the average cost reductions. Most of the institutions will decrease the cost of offering the course(s) and hold enrollment constant. Under these conditions, the percentage decrease in the total dollar cost and the cost-per-student is the same.

When an institution plans to increase enrollment, however, the percentage decrease in the cost-per-student will be different from the percentage decrease in the total dollars. While the total cost could increase, particularly if the enrollment increase is large, or decrease somewhat, the cost-per-student will decrease even more since more students are being served with fewer resources than would have been needed under the traditional model.

How will cost reduction be achieved by the participating institutions?

There are two primary ways that cost reduction will be achieved: 1) by increasing section size, and 2) by increasing the number of sections that full-time and adjunct faculty count toward their load. Both of these strategies will be implemented without increasing faculty workload because of the elimination of repetitive tasks such as hand-grading homework, quizzes and exams.

Increasing section size:

Thirty-one of the 38 institutions plan to reduce costs by increasing section size.

In the traditional format, all institutions offer developmental math in section sizes of ~30 or less:

- 11 institutions (28%) have section sizes of 20 or less.
- 25 institutions (64%) have section sizes of between 20 and 30.
- 3 institutions (8%) have section sizes of 30 or 31.

In the redesigned format, 70% will have section sizes of 30 or more:

- 12 institutions (31%) will have section sizes of less than 30. (vs. 100% in the traditional).
- 8 institutions (21%) will have section sizes of 30 to 35. (vs.0% in the traditional).
- 19 institutions (49%) will have section sizes of 40 to 60. (vs. 0% in the traditional).

(There are 39 institutions listed because one institution has different section sizes for different courses.)

Increasing the number of sections counted in load:

Seven institutions plan to increase the number of sections that counts as a full load while keeping section size the same or decreasing section size. The number of sections that will count as a full load will increase by 30% to 100%. (Example: In the traditional format, a full-time faculty member taught 10 sections per year; in the redesigned format, he/she will teach 12, 13, 15 or 20 sections per year.)

- 2 of these 7 institutions will also pay adjunct faculty teaching four credits of the redesigned developmental math the equivalent of three credits of traditional developmental math.

Increasing section size and the number of sections counted in load:

- 3 institutions will both increase section size and increase the number of sections counted in a full-time faculty member's load.
- 1 institution will both increase section size and pay adjuncts teaching two sections of the redesigned developmental math the equivalent of one section of traditional developmental math.)

Why is the 28% average reduction lower than NCAT's 37% average?

The average cost reduction in 120 completed NCAT redesigns has been about 37% whereas the average cost reduction in the *Changing the Equation* projects is projected to be about 28%. What accounts for the difference?

Despite their utilization of the cost strategies described above, a large number of the redesigns plan to increase the proportion of full-time faculty teaching developmental math:

- The total number of traditional sections offered at the 38 institutions is 4,185. Of these 1,623 (39%) are taught by full-time faculty and 2,562 (61%) are taught by adjuncts.
- After redesign, the total number of sections planned to be offered is 3,159. Of these, 1,377 (44%) will be taught by full-time faculty, and 1,782 (56%) will be taught by adjuncts.

A five percentage point swing in full-time/adjunct ratios may not seem like a lot, but since full-time faculty are generally paid about three to four times as much per section as adjunct faculty, the impact of this shift is quite dramatic.

Currently, the proportion of full-time faculty teaching developmental math is less than 50% at the majority of institutions:

- At 10 institutions (26%), the proportion of FT faculty teaching developmental math is less than 25%.
- At 17 institutions (45%), the proportion of FT faculty teaching developmental math is between 25% and 50%.
- At 11 institutions (29%), the proportion of FT faculty teaching developmental math is more than 50%.

In the redesigns, 55% of the institutions (N=21) plan to increase the proportion of full-time faculty teaching developmental math, ranging from a 6% to a 161% increase. At nine institutions (24%), the full-time/part-time ratio will stay the same. Eight institutions (21%) plan to decrease the proportion of full-time faculty, ranging from an 8% to a 71% decrease.

Conclusion

While *Changing the Equation* is at an early stage, we can draw a number of preliminary conclusions. The first is that currently there appears to be no relationship between the amount of dollars spent on developmental math and the success rates achieved. The current cost of offering developmental math varies widely (from $100 to $400 per student) with no concomitant impact on the outcomes achieved. Throwing money at the problem of abysmal pass rates in developmental math is not a solution. In fact, the participating institutions will follow the example of their NCAT predecessors and reduce their costs while improving outcomes. These cost reductions will be achieved, in many cases while *increasing* the percentage of full-time faculty teaching developmental math and without increasing faculty workload.

Second, it is absolutely clear that the developmental math commercial marketplace is sufficiently mature to support these redesigns with high-quality instructional materials at a reasonable cost. Access to reasonably priced software for developmental math students is a non-problem. Thanks to the availability of this software, faculty can focus on pedagogy rather than materials creation. Faculty can also work with more students due to the capabilities of this of software--they can work smarter not harder.

Third, despite the association of the Emporium Model with the need for a large lab due to its successful implementation at places like Virginia Tech, LSU and the University of Alabama, we now know that it can be implemented in relatively small spaces and at relatively small institutions. The majority of the Changing the Equation institutions will implement the model in small labs or small computer classrooms.

Finally, the size of the target population of *Changing the Equation* (120,000 students) makes this program the largest developmental math reform project ever conducted. Assuming that these redesigns replicate the prior successes achieved at NCAT partner institutions, we may well be on the way to solving the developmental math problem throughout the nation.

--Carol A. Twigg

WHAT'S NEW

Featuring updates and announcements from the Center.

Carol Twigg Weighs in on the Quality of Online Learning

In its October 31, 2010 issue, *The Chronicle of Higher Education* posed the following question to six higher education experts: "Has the quality of online learning kept up with its growth?" Joining NCAT's Carol Twigg in responding were Elliott Masie, CEO of the Masie Center; Alexander McCormick, director of the National Survey of Student Engagement (NSSE); Robert Mendenhall, president of Western Governors University; Janet Salmons, a business faculty member at Capella University; and George Veletsianos, an instructional technology faculty member at the University of Texas at Austin. The respondents, in general, did not see a need to focus on the question of online teaching and learning quality. As Bob Mendenhall said, "The key to quality isn't the delivery mode. There have been numerous studies . . . which show that online learning is equal to or perhaps slightly better than classroom education." Alex McCormick agreed and elaborated, "The truth is that we know astonishingly little about the 'quality' of nearly all collegiate programs, whether face-to-face or online. . . . From my perspective, the mode of instructional delivery isn't the issue. . . . The real issue is the warrant for claims of educational legitimacy of individual courses as well as entire courses of study." Carol concurred but also added, "I, for one, am not satisfied with the current quality of face-to-face programs and their translation to the online environment. If we have any hope of achieving what is becoming known as the college-completion agenda, . . .we must substantially improve the quality of instruction at our institutions. . . . We need to redesign our approaches to online learning to take advantage of the capabilities of information technology. I am encouraged, because I know it can be done." To read the entire article, see www.chronicle.com/article/Forum-Has-Online-Learings/125117/.

Australia To Test Feasibility of Course Redesign

In December 2010, Carol Twigg and Carolyn Jarmon journeyed to Australia to meet with representatives of the LH Martin Institute for Higher Education Leadership and Management at the University of Melbourne. The Martin Institute has been established to enhance tertiary education in Australia and New Zealand by providing programs and activities focused on the leadership and management development of current and aspiring leaders. Over a three-day period, the group discussed the feasibility of applying NCAT's course redesign methodology to Australia's institutions of higher education, which face many of the same problems as their U.S. counterparts. On the third day, a group of faculty and administrators from several Australian universities and representatives of the Australian Learning and Teaching Council joined the group to further explore the possibility of launching a course redesign program in Australia. The group decided to move forward on a pilot project involving three universities over the next two years. The project is being coordinated by Leo Goedegebuure, deputy director of the Martin Institute, and Hamish Coates, director of higher education research at the Australian Council for Educational Research and associate professor at the Martin Institute. NCAT will conduct an orientation workshop via webinar for potential participants in early March 2011. To learn more about this program, contact Leo Goedegebuure at leo.g@unimelb.edu.au.

TIAA-CREF Leadership Institute Considers Alternative Approaches

Carol Twigg recently spoke at the invitational TIAA-CREF Institute's Higher Education Leadership Conference held on November 4-5, 2010, in New York City. Its primary audience is the senior leadership of higher education: college and university presidents and chancellors, provosts, and CFOs who gathered to share their ideas and explore solutions with colleagues from all sectors and from across the nation. This year's conference focused on higher education's "new normal" but with an eye to the future. Some of the topics explored were future trends for higher education**:** how to maintain quality amidst drastic cuts; how to meet the Obama, Lumina and Gates goals for higher education; and how leaders can continue to be courageous and cope with increased stress. All sessions focused on creative solutions, innovative ideas, and transformative changes for leaders to consider. Carol joined Peter Smith, now senior vice president of academic strategies and development at Kaplan Higher Education, to discuss what the for-profit and nonprofit sectors of higher education could learn from one another. Both agree that faculty at nonprofits need to embrace the data-driven assessments of teaching and learning that are commonly used by for-profit institutions. Both also agreed that the for-profits have a record of providing flexible course offerings to working adults for whom traditional educational models just don't work, something that some traditional institutions are learning to emulate. To learn more about the Institute, see http://www.tiaa-cref.org/public/about/news/gen1011_242.html.

Arts and Sciences Deans Learn about Course Redesign

On November 11, 2010, Carolyn Jarmon presented the luncheon address at the annual meeting of the Council of Colleges of Arts and Sciences in New Orleans, LA. Over 400 deans, associate and assistant deans from private and public institutions across the United States learned about what course redesign has accomplished and what the role of deans has been in past initiatives. Several of the participants had conducted successful redesigns as part of one of NCAT's national or state programs; others were learning about course redesign for the first time. To learn more about the Council of Colleges of Arts and Sciences, see http://www.ccas.net/i4a/pages/index.cfm?pageid=1.

CHANGING THE EQUATION

Engaging community colleges in a successful redesign of their developmental math sequences.

***Changing the Equation* Participants Prepare for Spring 2011 Pilots**

All 38 institutions participating in *Changing the Equation* are on schedule to pilot test their developmental math redesigns during the spring 2011 term. Each of the 38 institutions has been assigned a Redesign Scholar to offer individualized assistance and expertise as needed and provided with travel funds to support campus visits to or from the assigned Scholars. Several institutions have already organized Scholar visits to aid in planning while others will schedule visits during the spring 2011 pilots. Many of the colleges have received assistance from the companies providing the software central to the redesigns. Carnegie Learning, Hawkes Learning Systems, McGraw-Hill and Pearson Education have helped institutions in aligning publisher content with campus-created math modules and with training in use of the software. Enrollment and registration policies that enable students to start a subsequent course as they finish one within the same semester have been among the key issues that have been identified and resolved. Both Manchester Community College and Wilbur Wright College have made presentations on their redesign plans to their state systems. Overall, the progress reports submitted by each of the 38 community colleges demonstrate enthusiasm for their redesigns and optimism that their plans will yield greater student learning and lower costs. For more information about *Changing the Equation* and the institutions involved, see http://www.theNCAT.org/Mathematics/CTE/CTE.htm.

***Changing the Equation* Facts at a Glance**

Since all of the institutions involved in *Changing the Equation* are addressing the same academic problem and will redesign their entire developmental math sequences using the Emporium Model and modularization, NCAT will not post abstracts of each project on its web site. Instead NCAT has developed a series of charts to identify how the projects differ and to provide a comparison of the "before" and "after" circumstances of each community college.

- Chart #1 Developmental Math Enrollment shows the total enrollment and number of sections offered in each institution's traditional and redesigned course sequences.
- Chart #2 Courses and Modules shows the total number of courses offered in each institution's traditional and redesigned course sequences and the planned number of modules that will be offered in the redesign.
- Chart #3 Emporium Model Variation shows which version of the Emporium Model (fixed, flexible or fixed/flexible) has been chosen by each participating institution.
- Chart #4 Comparative Costs shows the cost of offering developmental math in the traditional (actual) and redesigned (projected) formats at participating institutions.
- Chart #5 Cost Reduction Strategies shows the cost reduction strategy chosen by each participating institution including changes in section size and in faculty load.
- Chart #6 Full-time/Part-time Ratios shows the number of sections taught by full-time and part-time faculty in the traditional (actual) and redesigned (planned) formats at participating institutions.

These charts provide a fascinating data source that highlights the range of approaches currently used to deliver developmental math as well as the variety of plans produced by these 38 institutions as they move forward to provide a flexible, student-centered, cost-effective approach for students. To view these charts, see www.theNCAT.org/Mathematics/CTE/CTE_Facts.html.

CENTER CHRONICLES

Featuring initiatives to scale course redesign through state- and system-wide redesign programs.

Missouri Launches Statewide Redesign Initiative

The Governor of Missouri and Missouri's public four-year institutions have established a major course redesign initiative, in partnership with NCAT, to redesign large-enrollment, multi-section undergraduate courses using technology-supported active learning strategies. The goal is to achieve improvements in learning outcomes as well as reductions in instructional costs. During the period 2011-2013, the program expects to support one project at each of the 13 participating campuses. The Missouri Course Redesign Initiative grew out of the August 2010 Governor's Higher Education Summit, where the concept of course redesign was first introduced. On November 22, 2010, Carol Twigg met with the chief academic officers and University of Missouri system representatives to work out the details of the program. The participating institutions are **Harris-Stowe State University**, **Lincoln University**, **Missouri Southern State University**, **Missouri State University**, **Missouri University of Science and Technology**, **Missouri Western State University**, **Northwest Missouri State University**, **Southeast Missouri State University**, **Truman State University**, **University of Central Missouri**, **University of Missouri-Columbia**, **University of Missouri-Kansas City**, and **University of Missouri-St. Louis**.

NCAT will conduct an orientation workshop on February 18, 2011 in Columbia, MO, where faculty and administrators will learn about the program's goals and requirements, as well as the process of course redesign. Following the first workshop, institutions will form redesign teams and respond to a set of readiness criteria. Teams will also complete a series of homework assignments prior to a second planning workshop, which will be held on April 8, 2011. For more information about the Missouri initiative, see http://www.theNCAT.org/States/MO.html or contact Christa Weisbrook at chris@umsystem.edu.

Tennessee Board of Regents Scales Developmental Education Redesign Systemwide

From 2006 to 2009, the Tennessee Board of Regents (TBR) conducted an initiative to redesign its developmental education programs in reading, writing, and math in partnership with NCAT. Four institutional redesigns produced outstanding results: **Austin Peay State University**, **Jackson State Community College** and **Cleveland State Community College** in math, and **Northeast State Community College** in reading. These institutions demonstrated that using the Emporium Model and a modularized course structure were extremely effective in increasing student success and allowing accelerated completion of the gaps in a student's readiness for college-level work. The initiative, funded by a grant from the Fund for the Improvement of Postsecondary Education (FIPSE), also included an effort to scale those successes to all 19 institutions in the TBR system by instantiating what was learned in TBR policy. A multi-year task force that included representatives from all TBR institutions drafted new policy statements that reflected the redesign models.

On August 17, 2010, the presidents of the TBR institutions approved a new TBR policy for developmental studies, now called "learning support." The new policy specifies how students are placed in the Learning Support courses; what levels of success on one of the specified list of multiple measures are needed; and what the competencies of learning support will be, as established by ACT college readiness benchmarks and standards. While the structure of learning support will be determined by each institution, each must 1) offer students the opportunity to accelerate and complete all needed competencies in one term, 2) focus on the competencies needed to be ready to engage in college-level work rather than what might be needed to remediate high school deficiencies, and, 3) require that students engage in the needed learning support courses in their initial terms in college rather than whenever the student wants to do so. The new policy also requires that "delivery of learning support must be based on proven methods of integrating technology and learner-centered pedagogy and must address the desired learning competencies. [It] must provide for students to be able to move progressively and consistently through the learning support interventions without having to repeat interventions related to competencies for which mastery learning has been demonstrated." Thus, it is no longer acceptable for students to start a course over once the student has demonstrated mastery of some of the competencies included in it. Students must be able to continue where they left off rather than repeat what they have already mastered.

TBR's goal is to complete a systemwide redesign of developmental education in reading, writing, and math at all institutions by fall 2013. All institutions submitted a redesign plan to Paula Short, TBR Vice Chancellor for Academic Affairs, in December 2010. TBR staff will review those plans and provide feedback during the spring 2011 semester. Some institutions have already redesigned one or more subject areas, and others will begin to implement redesign plans in fall 2011. Systemwide training opportunities will be developed and provided as resources allow. A systemwide committee has worked with the TBR information technology staff to make changes to the student information system (BANNER) that will support the new policy as well as the transition to the new policy over the next three years. The plan is for BANNER programming to be completed, tested, and implemented in time for the fall 2011 first-time freshman cohort. For more information about the TBR initiative, see http://www.tbr.state.tn.us/policies/default.aspx?id=6746 or contact Paula Short at Paula.short@tbr.edu.

Chattanooga State Community College Spearheads New TBR Policy

Chattanooga State Community College is the first institution in the Tennessee Board of Regents (TBR) system to redesign its developmental math program to conform to the new policy guidelines described above. Chatt State has combined three math courses into two, eliminating a basic math course by integrating its concepts into the other courses, and modularizing the two-course sequence. Building on the successes achieved by other TBR institutions using NCAT's Emporium Model, Chatt State's redesign requires students to spend one

hour working with instructional software in a computer classroom, one hour in a math lab and at least one additional hour at home or in the lab each week. Optional mini-lectures and face-to-face help sessions are also offered throughout the week.

When students complete one developmental course, they can move directly into the next course. During fall 2010, 95 students completed two developmental math courses in one semester. When students complete the developmental math sequence, they can then move directly into college-level math, which provides a major completion incentive which did not exist before the redesign.

In the first year of full implementation, student success rates have already improved. From 2005 to 2007, the average success rate (a grade of C or better) in Intermediate Algebra (the exit course) was 51%. In spring 2010 after the initial redesign, the success rate was 65%, and the fall 2011 rate was 67%. Since the redesign was implemented, the number of students successfully exiting the developmental math sequence has been the highest in the history of the institution. Prior to the redesign, that number was slightly less than 500 students. In fall 2010, 810 students successfully exited the program. While 25% of the increase can be attributed to departmental growth over the past two years, the rest is due to increased success rates in the program and the continuous enrollment plan, where students can complete multiple courses in one semester.

As student success has increased, costs have been reduced. Enrollment in developmental math has grown by 25% over the last two years, yet the cost of offering developmental math has held steady.

These impressive numbers reflect the hard work and sustained commitment of the faculty, staff and administration at Chatt State, and their dedication to improving student success. The folks at Chatt State say, “We haven't arrived. We remain a work in progress, but we are on the right track and continue to improve and adjust.” Success begets success. In the words of one faculty member, "I saw more smiling faces and got more hugs these past few days than I have gotten the whole 21 years I have been at Chattanooga State. I like seeing students happy about math."

Chatt State is in the process of expanding its large computer lab to include 195 computers and adding five computer classrooms nearby. They are also redesigning the entire math curriculum--from developmental math through calculus--and will have done so in two years. To top it off, they have also introduced redesign to their local high schools. In fall 2010, 123 students enrolled in the ECHO (Early College Hybrid Online) program. The program had a phenomenal 98% success rate in the fall semester and is expected to expand. To learn more, contact John Squires, math department chair, at John.Squires@ChattanoogaState.edu.

University System of Maryland Expands Course Redesign Across the State

The University of Maryland System (USM) is expanding course redesign to a statewide level with two initiatives that will produce more than 50 newly redesigned courses over the next three years. Building on NCAT’s successful models and lessons learned, USM is establishing a redesign infrastructure comprising five Redesign Fellows and a program for USM institutions called the Carnegie Course Redesign Initiative (CCRI), funded by the Carnegie Foundation. USM has appointed five Redesign Fellows: Raouf Boules (mathematics), **Towson University**; Megan Bradley (psychology), **Frostburg State University**; Ron Gutberlet (biology), **Salisbury University**; Jennifer Hearne (chemistry), **University of Maryland Eastern Shore;** and, Eileen O’Brien (psychology), **University of Maryland Baltimore County**. These experienced faculty, who worked with NCAT during the initial USM redesign program, will collaborate with their peers across the state over the next three years. The CCRI will establish three cohorts of faculty redesigners in fall 2010, fall 2012 and fall 2013. Each cohort will implement a pilot and will focus on large-enrollment courses, especially those with multiple sections, with the expectation of producing 30 redesigns over the next three years.

A second redesign effort is a USM partnership with community colleges and independent institutions in Maryland called “Growing by Degrees.” Funded by Lumina Foundation for Education, this initiative will provide leadership in expanding course redesign to *all* Maryland higher education institutions. As Chancellor William Kirwan characterizes the effort, “We want to change gatekeeper courses into gateway courses.” USM expects that across the state an additional 25 courses will be redesigned over the next two years with a focus on developmental and gatekeeper courses. To learn more about these initiatives, see http://www.usmd.edu/usm/academicaffairs/cr2/ or contact Don Spicer at dspicer@usmh.usmd.edu.

REDESIGN SCHOLARS PROGRAM

Linking those new to course redesign with experienced colleagues to whom they can turn for advice and support.

Leveraging the Expertise of an NCAT Redesign Scholar

As announced in the October 2010 issue of *The Learning MarketSpace,* NCAT has expanded its Redesign Scholars Program to include 50 experts in course redesign, adding greater breadth and depth of academic redesign expertise. Scholars are available to 1) speak at national, regional and local meetings and conferences; and, 2) consult with individual colleges and universities that want to initiate one or more course redesigns.

What kind of assistance do they offer? Based on a survey of the original 19 Redesign Scholars, we know that they are providing a wide-variety of services to higher education. Some of the activities could be easily anticipated. Redesign Scholars have organized campus events on course redesign, both face-to-face and virtual; spoken at conferences for particular academic disciplines, accrediting bodies, state organizations and companies; conducted or presented at workshops and seminars on course redesign; and, responded to emails,

held telephone conversations and hosted visiting teams from other campuses seeking to learn more about course redesign.

In addition to these activities, Redesign Scholars have also visited individual campuses or conducted sustained interactions with them to provide advice about how to initiate or expand a redesign program. Here is a sampling of the institutions that the original 19 Scholars have interacted with during the last year or so: John Harwood (**Virginia Tech**); Gordon Hodge (**Langston University**); Michelle Miller (**University of Arizona** and **California State University at Fresno**); Norb Pienta (**Missouri State University**); Phoebe Rouse (**Baton Rouge Community College**, the **Louisiana Community and Technical College System**, the **University of New Orleans**, **Pennsylvania State System for Higher Education** and **Penn State University**); Sally Search (**St. Louis Community College**); Candace Thille (**University of Pennsylvania**, **Washington State Community and Technical College System**, **University of Maryland University College** and **University of Texas at Austin**); Amiee Wagner (**Otterbein College**); and Jim Wohlpart (**University of South Florida**, **St. Petersburg College** and **University of Central Florida**.)

As you begin a course redesign effort on your campus, consider including the assistance and advice of an experienced Redesign Scholar. To learn more about the Redesign Scholars Program, see http://www.theNCAT.org/RedesignAlliance/ScholarsProgram.htm.

THE REDESIGN ALLIANCE

Featuring updates from the Alliance, a member organization of institutions, organizations and companies committed to and experienced with large-scale course redesign.

As described in the October 2010 issue of *The Learning MarketSpace*, the Redesign Alliance has temporarily suspended its large**,** multi-discipline**,** annual conference to hold a series of more focused events to serve more people at a reduced cost. So far this strategy is proving to be successful.

Interest Grows in How to Get Started on Course Redesign

On December 3, 2010, the Redesign Alliance co-sponsored a seminar, *Getting Started on Course Redesign*, with the University of Maryland System. A clear signal that more institutions are interested in course redesign: the seminar quickly reached capacity after its announcement. On January 25, 2011, the two co-sponsors repeated the seminar to accommodate a large waiting list. At the first seminar, NCAT's Carolyn Jarmon was joined by NCAT Redesign Scholars Jennifer Hearne from the **University of Maryland Eastern Shore** and Xiaoping Wang from **Northeast State Community College**, both of whom shared their experiences in redesigning chemistry and developmental reading respectively. At the second seminar, Carolyn Jarmon and Jennifer Hearne were joined by Redesign Scholar Betty Frost from **Jackson State Community College** who described how their developmental math redesign got started. At both seminars, William Kirwan, Chancellor of the **University System of Maryland**, shared his vision of the importance of course redesign and its expansion throughout the State of Maryland. Presenter slides from these seminars are available at http://www.thencat.org/RedesignAlliance/USM%20Getting%20Started%20Agenda.pdf (December) and http://www.thencat.org/RedesignAlliance/USM%20Getting%20Started%20Agenda_Jan2011.pdf (January).

Mathematics Redesign Workshops To Be Held in Orlando, FL

NCAT will offer an exciting two-part workshop, *Increasing Student Success in Developmental and College-Level Math*, on February 6-7 and February 8, 2011, in Orlando, FL. Registration to date is just over 300 participants. The event will begin on Sunday evening with a welcome reception and exhibits by corporate members of the Redesign Alliance who offer products and services that can be used in redesigning college-level and developmental math. Those exhibiting include **Carnegie Learning**, **Hawkes Learning Systems**, **iLearn**, **Pearson Education, SIRIUS Academics** and **SMARTHINKING**.

February 7 will be devoted to an Orientation Workshop for those who want to learn more about the Emporium Model and its successful implementation across the U.S. in both developmental and college-level math. Participants will select a track for either four-year or two-year institutions. NCAT Redesign Scholars from three institutions in each sector will join NCAT in sharing their redesign approaches, specifics about their particular redesigns including the problem they were trying to solve, the changes they made in the content and structure of the traditional course and the results they have achieved. Following a wrap-up panel, attendees will have the opportunity to engage individually with the Redesign Scholars during an informal session at the end of the day.

On February 8, a half-day Planning Workshop will give campus teams that are ready to launch a math redesign the opportunity to learn about specific next steps. Workshop topics have been selected to address the key implementation issues in developing a successful redesign such as how to organize an emporium, whether or not to modularize course content and how to engage students effectively. These sessions will involve Redesign Scholars who have successfully sustained a math redesign. More than 200 faculty and administrators have registered for this session.

Both workshop agendas as well as registration information can be found at http://theNCAT.org/RedesignAlliance/MathWkshp020611.html.

March 2011 Seminar on Science and Engineering Course Redesign

The Redesign Alliance and the **Dallas County Community College District** will co-sponsor a seminar showcasing successful course redesigns in science and engineering. Open to the higher education community,

the seminar will be held on March 11, 2011 at the LeCroy Center in Dallas, TX. At this seminar, two experienced faculty project leaders will describe their redesigns. Ron Gutberlet from **Salisbury University** will discuss the redesign of Fundamentals of Biology and Masoud Rais-Rohani will discuss **Mississippi State University**'s redesign of Statics, an introductory engineering course. Both Ron and Masoud are NCAT Redesign Scholars. In addition, LeCroy Center staff will provide an overview of a new online biology course which is under development. Participants will have the opportunity to talk with faculty who have led these projects and learn more about the challenges they have overcome and the outcomes they have achieved. The full agenda and registration information are available at www.theNCAT.org/RedesingAlliance/DCCCDWorkshop031111.html.

April 2011 Seminar on Social Science Course Redesign

The Redesign Alliance and Buffalo State College will co-sponsor a seminar showcasing successful course redesigns in the social sciences. Open to the higher education community, the seminar will be held on April 18, 2011 at the Buff State campus in Buffalo, NY. The seminar will feature two successful redesigns. Bill Ganley from **Buffalo State College** will discuss their redesign of The Economic System and Megan Bradley will describe **Frostburg State University**'s redesign of General Psychology. Both will focus on the effective use of undergraduate learning assistants (ULAs) as a key feature of their redesigns. Both Bill and Megan are NCAT Redesign Scholars. Participants will be able to learn about how the redesign projects got started, what issues the teams faced in implementing their redesigns and what learning improvements and cost reductions have been achieved. The full agenda and registration information are available at www.theNCAT.org/RedesignAlliance/BSCWorkshoip041811.html.

Institutions Take Advantage of New Redesign Alliance Membership Opportunities

NCAT now offers a diversified way for institutions to become involved in course redesign via two new levels of institutional membership in the Redesign Alliance: 1) a $10,000 level that includes the current member benefits plus one campus workshop annually conducted by NCAT staff and/or NCAT Redesign Scholars plus related follow-up telephone and email advice and counsel throughout the year; and 2) a $25,000 level that includes the current member benefits plus ongoing consultation about campus redesign activities from NCAT staff and/or NCAT Redesign Scholars throughout the year, including at least two campus visits. Each level provides increasing involvement with NCAT, with the Redesign Alliance and with the institutions undertaking course redesigns.

Following the announcement of these new levels, two institutions immediately saw the value and joined at the $10,000 membership level. The **University of South Florida** (USF) is initiating a campus-wide Request for Proposals that will provide support to three course redesigns during 2011 and an additional three in 2012. NCAT's Carolyn Jarmon visited the USF campus on January 21, 2011 to help kick off the initiative. She met with more than 80 interested faculty and administrators to share past redesign successes and advice for shaping the new initiative. At the **University of Nebraska-Omaha,** another new $10,000 member, a similar course redesign initiative is underway. Carolyn will visit the campus on March 4, 2011, to speak at an open session for all interested in these transformational ideas and to provide ideas and suggestions for shaping concrete implementation plans.

To learn more about Redesign Alliance membership options, see http://www.theNCAT.org/RedesignAlliance/Mem_Institution.html or contact Carolyn Jarmon at cjarmon@theNCAT.org.

Redesign Alliance Welcomes New Members

In addition to the University of South Florida and the University of Nebraska-Omaha, the Redesign Alliance is pleased to welcome **California State University, Chico**; the **University of South Dakota**; and, **iLearn** as new members. While these universities need no introduction, our newest corporate member may not be as familiar. New to the higher education arena, iLearn has been in business since 1989 with the sole mission of delivering high quality instruction using technology, specifically helping schools improve student achievement in math. iLearn will exhibit for the first time at the February Math Workshop described above. Members of the Redesign Alliance seek to advance the concept of course redesign throughout higher education to increase student success and access while containing or reducing instructional costs. The organization is open to all institutions, companies and organizations in higher education who share these goals. Membership information is available at www.theNCAT.org/RA.htm or contact Carolyn Jarmon at cjarmon@theNCAT.org.

CORPORATE CONNECTIONS

Linking content and software providers with leading edge institutions.

Two Upcoming Pearson Education Events Focus on Course Redesign

On February 2, 2011 Pearson Education will sponsor its first Online Conference on Course Redesign. Speakers will include those who have participated in successful developmental reading, writing and math course redesigns. They will discuss a variety of issues such as understanding when and why to redesign, how to get started on course redesign, and things to consider when planning a course redesign. Participants may attend one or more of the 45-minute webinars offered that day. All sessions are live and include Q&A time. Registration is free. For more information, see http://www.pearsonhighered.com/speakingabout/courseredesign. On March 17-20, 2011, Pearson will sponsor the 23rd Annual International Conference on Technology in Collegiate Mathematics (ICTCM) in Denver, CO. ICTCM has become an essential conference for those interested in improving mathematics instruction in higher education. NCAT's Carolyn Jarmon will offer a session

highlighting successful redesigns of mathematics at NCAT partner institutions and how institutions have gotten started on their redesigns in a variety of math courses. For more information and to register, go to http://ictcm.pearsontc.net/program. To learn more about either of these events, contact Karen Mullane at karen.mullane@pearson.com.

COMMON GROUND

Reporting on initiatives that share the Center's goals and objectives.

McKinsey Issues Report on Higher Education Productivity

McKinsey & Company recently issued a report, *Winning by degrees: the strategies of highly productive higher education institutions*. The report's goals are to "provide a snapshot of current levels of productivity in all U.S. higher education institutions; to understand in detail the most important drivers of productivity in a sample of eight of the most productive institutions; and to suggest approaches to incorporating those drivers across the higher education system."

McKinsey estimates that the US needs to graduate roughly one million more people a year by 2020 to ensure that the country has the skilled workers it needs to maintain economic growth. If nothing changes in the productivity of higher education institutions--by which they mean the number of students who complete degrees versus its total costs--this means an additional $52 billion a year could be required (unlikely given the current financial climate.) In light of the challenging environment for higher education spending and in order to achieve this without increasing public expenditures or compromising quality, U.S. higher education institutions would need to improve their degree completion productivity by an average of 23 percent. This productivity improvements sounds like a formidable challenge, but it is feasible through a combination of boosting graduation rates and improving cost efficiency as has been demonstrated by top quartile US institutions which already are 17 to 38 percent more productive than average.

Through an in-depth study of eight highly productive two-year and four-year colleges and universities—with productivity 32 to 60 percent higher than average—McKinsey has identified what they call "five winning strategies" The first two practices, 1) systematically enabling students to reach graduation and 2) reducing nonproductive credits, contribute to raising the rate at which students complete their degrees. The next three practices, 3) redesigning the delivery of instruction, 4) redesigning core support services, and 5) optimizing non-core services and other operations, contribute to reducing cost per student." The report provides descriptive abstracts of each of the eight institutions, along with data to support their conclusions. To read the full report, see http://sso.mckinsey.com/UShighereducation.

SUBSCRIPTIONS, SUBMISSIONS, ARCHIVES, REPOSTING

The National Center for Academic Transformation serves as a source of expertise and support for those in higher education who wish to take advantage of the capabilities of information technology to transform their academic practices.

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